

WHAT IS CLAIMED IS:

1. A switch valve comprising:
a single valve housing;
a first passage formed in the valve housing to permit a fluid to flow into the valve housing;
a second passage formed in the valve housing to permit, at selected times, the fluid in the first passage to exit the valve housing;

10 a third passage formed in the valve housing to permit, at selected times, the fluid in the first passage to exit the valve housing;

15 a first valve mechanism incorporated in the valve housing for selectively connecting and disconnecting the first passage with the second passage in accordance with an external instruction; and

20 a second valve mechanism incorporated in the valve housing for selectively connecting and disconnecting the first passage with the third passage in accordance with the difference between the pressure in the first passage and the pressure in the second passage.

25 2. The switch valve as set forth in claim 1, wherein the second valve mechanism connects the first passage with the third passage if the pressure in the first passage is higher than the pressure in the second passage by a predetermined amount.

30 3. The switch valve as set forth in claim 1, wherein the first valve mechanism is an electromagnetic valve.

4. The switch valve as set forth in claim 1, wherein the switch valve is incorporated in a refrigerant circuit including a compressor, a condenser and an evaporator,

wherein the first passage is connected with an outlet of the compressor, the second passage is connected with an inlet of the condenser, the third passage is connected with an inlet of the evaporator, and the fluid is refrigerant.

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5. The switch valve as set forth in claim 4, wherein the refrigerant exits the compressor and passes through the condenser and the evaporator and returns to the compressor when the first valve mechanism is open and the second valve mechanism is closed, and wherein the refrigerant exits the compressor and passes through the evaporator and returns to the compressor without passing through the condenser when the first valve mechanism is closed and the second valve mechanism is open.

7. The switch valve as set forth in claim 6, wherein the first valve mechanism is an electromagnetic valve, wherein no electric current is supplied to the first valve mechanism so that the first valve mechanism is open when a cooling operation is performed, and wherein an electric current is supplied to the first valve mechanism so that the first valve mechanism closes when a warming operation is performed.

30 8. The switch valve as set forth in claim 1, wherein the
first valve mechanism includes:

a valve seat located between the first passage and the second passage;

5 a valve body opposing the valve seat, wherein the valve body separates from the valve seat to connect the first passage with the second passage, and wherein the valve body contacts the valve seat to disconnect the first passage from the second passage; and

10 an electromagnetic actuator for actuating the valve body, wherein the valve body separates from the valve seat when no electric current is supplied to the electromagnetic actuator, and wherein the valve body contacts the valve seat when an electric current is supplied to the electromagnetic actuator.

15 9. The switch valve as set forth in claim 8, wherein the first valve mechanism further includes an urging member for urging the valve body away from the valve seat in accordance with the pressure difference between the first passage and the second passage if a current supply to the electromagnetic actuator is stopped when the valve body is in contact with the valve seat.

20 10. The switch valve as set forth in claim 9, wherein the urging member includes a diaphragm.

25 11. The switch valve as set forth in claim 1, wherein the second valve mechanism includes:

a valve seat located between the first passage and the third passage;

30 a valve body opposing the valve seat, wherein the valve body separates from the valve seat to connect the first passage with the third passage, and wherein the valve body contacts the valve seat to disconnect the first passage from the third passage;

a first pressure chamber connected with the first passage;

a second pressure chamber connected with the second passage; and

5 a pressure sensitive body separating the first pressure chamber from the second pressure chamber, wherein the pressure sensitive body moves the valve body in accordance with the pressure difference between the first pressure chamber and the second pressure chamber.

10 12. The switch valve as set forth in claim 11, wherein the second valve mechanism further includes a spring for urging the valve body toward the valve seat, and wherein the pressure sensitive body separates the valve body from the valve seat against the force of the spring if the pressure in the first pressure chamber is higher than the pressure in the second pressure chamber by a predetermined amount.

15 13. A switch valve provided in a refrigerant circuit including a compressor, a condenser and an evaporator, the switch valve comprising:

20 a first valve mechanism located between an outlet of the compressor and an inlet of the condenser, wherein the first valve mechanism selectively connects and disconnects the outlet of the compressor with the inlet of the condenser in accordance with an external instruction;

25 a second valve mechanism located between the outlet of the compressor and an inlet of the evaporator, wherein the second valve mechanism selectively connects and disconnects the outlet of the compressor with the inlet of the evaporator in accordance with the difference between the pressure at the outlet of the compressor and the pressure at the inlet of the condenser; and

30 a single valve housing incorporating the first valve mechanism and the second valve mechanism.

14. The switch valve as set forth in claim 13, wherein the refrigerant, after exiting the compressor, passes through the condenser and the evaporator and returns to the compressor if the first valve mechanism is open and the second valve mechanism is closed, and wherein the refrigerant, after exiting the compressor, passes through the evaporator and returns to the compressor without passing through the condenser if the first valve mechanism is closed and the second valve mechanism is open.

10 15. The switch valve as set forth in claim 14, wherein the second valve mechanism opens when the pressure at the outlet of the compressor becomes higher than the pressure at the inlet of the condenser by a predetermined amount after the first valve mechanism is closed.

15 20 16. The switch valve as set forth in claim 15, wherein the first valve mechanism is an electromagnetic valve, wherein no electric current is supplied to the first valve mechanism so that the first valve mechanism is open when a cooling operation is performed, and wherein an electric current is supplied to the first valve mechanism so that the first valve mechanism closes when a warming operation is performed.

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